ABSTRACT

An error diffusion method and system to ameliorate the effects of data quantization. The error diffusion method is especially well-suited to display systems that process groups of pixels in a given row (318) simultaneously. Errors generated when processing pixels in one row (318) of a first group (314) cannot be propagated to other pixels in the same row (318) of the same group (314) since the other pixels are processed by the time the error signal is available. The method and system pass errors from most of the pixels (302) in the group (314) to pixels below and to the right in the next row (320) of the same group (314). Errors from the last pixel (304) in the group (314) are passed to the pixel (308) in the following row (320) beneath the last pixel (304) and to the first pixel (310) in the next group (316) of pixels in the same row (318). To avoid creation of structured visual patterns, a white noise signal is added to the error signals. The noise error signal is created by generating a pseudo random number and adding the pseudo random number to one portion of the error signal while subtracting the pseudo random number from a second portion of the error signal. In effect, the pseudo random number changes the allocation of the error to among adjacent pixels, thus avoiding the structured visual artifacts caused by using deterministic diffusion filter coefficients.